

**ROCKY MOUNTAIN CENTER FOR
OCCUPATIONAL AND
ENVIRONMENTAL HEALTH -
EDUCATION AND RESEARCH CENTER
FOR OCCUPATIONAL SAFETY AND
HEALTH**

SUMMARY ANNUAL REPORT

July 1, 2013-June 30, 2014

**NIOSH Training Grant
No. T42 OH 008414**

**SUBMITTED BY:
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Section I

ERC Summary

The RMCOEH is a vibrant, innovative and growing ERC that has been in existence at the U. of Utah since 1977. It is one of only two ERCs in Region 8 (UT, CO, WY, MT, ND, SD), although these states are in the top rankings for occupational fatalities and thus have an urgent need for more OSH professionals. In the past grant period, we have made major progress, including ground-breaking legislation supporting the RMCOEH. We have 2 new endowed chairs (OSH and mining). We have continued to make progress in the past year. Our programs are growing and quality of graduates has accelerated. We have 5 graduate degrees (MOH, MSOH, PhD in OEH; plus MS and PhD in MEEN). We now have a new graduate certificate program in OSH. The RMCOEH has academic programs in OMR, IH, E&S and OIPRT and has over 150 full time, adjunct and other supporting faculty. We provide specific curricula by OHNs to teach the importance of OHN to our trainees. Our CE and Outreach Programs train >6,000 trainees/year. Overall center impacts are over 2,500 businesses annually.

The RMCOEH enjoys unparalleled collaborative relationships with businesses, employee groups, governmental units, and other community organizations. These foster an atmosphere that facilitates state-of-the art training for OSH professionals for the 21st Century. These relationships also provide the external 'laboratories' to test research theories and develop the innovations to provide safer and healthier workplaces. We also have a highly active RMCOEH Advisory Board and a Center Executive Committee that are critical in advancing the RMCOEH's programs. The RMCOEH has the infrastructure to support the NORA II, r2p and other research missions. The RMCOEH's CE and Outreach programs promote and publicize efficacious strategies and help ensure that knowledge is translated into practice.

Relevance

The RMCOEH is among the largest graduate OSH training programs in the US. It serves HHS Region 8 which has among the highest occupational death and injury rates. The RMCOEH's NORA research programs address major deficits in the region/nation's OSH. Research foci particularly include: musculoskeletal disorders, respiratory protection, transportation safety, and mining issues.

Key Personnel

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ERC web link

<http://medicine.utah.edu/rmcoeh/>

Section II

Administration Kurt T. Hegmann, MD, MPH, Center Director

In 2013-14, the RMCOEH continued to meet all goals and objectives. The RMCOEH holds monthly Center Executive Committee meetings, biannual RMCOEH Advisory Board meetings, Advisory Board Executive Committee meetings and an annual RMCOEH retreat. There were several major advances.

- The RMCOEH has matriculated and graduated its 7th class of students in our relatively new, accredited Master of Occupational Health and Master of Science in Occupational Health Degree Programs.
- We have received approval for a new Graduate Certificate Program in OSH.
- The center continued implementation of our plan to increase student publications, with demonstrable major successes over the past year.
- The RMCOEH continues to admit students into our new Ph.D. in Occupational & Environmental Health program that has 3 emphases (Industrial Hygiene, Occupational Injury Prevention and a General emphasis).
- Further work to advance distance-based education is being substantially advanced that started with the arduous task of recording nearly all lectures.
- RMCOEH received notification of funding of another new R01 award.

Diversity Recruitment Darrah Sleeth, PhD

RMCOEH faculty members continue to work with Colin Ben, Assistant Dean for Diversity at the University of Utah to maintain and increase recruitment from under-represented groups. For example, under-represented individuals who expressed an interest in related graduate programs have been identified through the GRE Search Service and personalized contact has been made. In addition, increased contact, including providing program brochures, has been initiated with those involved with diversity at other universities in Region 8, including several Native American Tribal Colleges, as well as with various community and student organizations.

Statistical Economic Evaluation Unit (SEEU) Maureen Murtaugh, PhD

The SEEU served as a resource to the Center in providing the statistical and economic tools for evaluating interventions to improve workplace health and safety. The SEEU continues to contribute through providing insights, including participation in journal club meetings, consultation regarding analysis approach for publications, and participation in grant preparation. The most recent graduate student survey results are being implemented to keep all of our educational programs exceptional.

Outreach Matthew Hughes, MD, MPH

Outreach continued to be a significant emphasis at the RMCOEH, maintaining the goal of ensuring that knowledge is translated into practice. The Center policy requires measurable outreach activities by each faculty member with thousands of contact hours recorded annually. We logged contact hours in activities that included appointments, presentations, consultations, and participation in career day events for national, regional and academic institutions, local business and trade, insurers, community groups, occupational and environmental health organizations, and the public. The program is continuing to explore how to put an effective but narrow foothold in social media that is useful to target audience(s) while optimizing faculty time required.

Pilot/Small Projects Research Training (PPRT) Maureen Murtaugh, RD, PhD

We have tracked progress of the prior year grantees and include results of a few here. Ms. Ulrike Ott's 2012-13 award assessing the "Relationship of Cholesterol Levels and Knowledge among an Industrial Population" resulted in a paper that has been submitted and the completion of her PhD. The 2013-14 project summary for the Innovaflex Tendon Rehabilitation Device was reported the IEEE Engineering in Medicine and Biology Conference in August, 2014. The 2013-14 project "Solubility of Metals in Hard Rock Mine Ores in Simulated Lung Fluids" was completed by Dr. Pahler with the help of Jordan Kyle and David Adams in partial fulfillment of the requirements for their MSOH degrees. A paper is in draft with the target journal being the Journal of Chemical Health and Safety with submission planned in September 2014. Dr. Cheng's proposal on Opioid use

in Utah was delayed by the approval process for the Controlled Substance Database, but an extension was granted and analysis is underway. Dr. Cheng anticipates submission of a paper within 6 months.

The review committee met on June 27, 2014 to discuss the seven pilot proposals that were submitted. The review is aligned with NIH review including use of the NIH review template for R03 projects. Three were deemed not detailed enough to merit funding. Four awards were made and awardees were notified the first week of July. We solicited proposals from our Region and are pleased to report that one award was made to the University of Arizona. Three awards were made to University of Utah junior faculty and to support graduate students. Members were pleased with grading process, funding levels, and the number and quality of applications.

Ergonomics & Safety (E&S) Don Boswick, PhD, PE, CPE

The focus of the E&S Program has shifted to training Ph.D. students. In the past year 12 full time (5 M.S. and 7 Ph.D.) were trained of whom 7 received NIOSH support during the year. All topics (both "highly recommended" and "recommended") included in the NIOSH Guidelines for Graduate Programs in Occupational Safety (by The Occupational Safety Academic Training Program Panel) are covered in the M.S. and Ph.D. program courses (or pre-requisites). E&S students are required to present their research at the successful, annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, which has been held on the University of Utah campus since 2003. With the focus on Ph.D. research, E&S students were authors on 7 peer-reviewed publications with 3 more submitted and 1 in revision and 5 national/international conferences. All NIOSH supported trainees take the interdisciplinary course "Occupational Health Solutions" as the capstone of their course program. The course is team taught by Drs. Wood, Boswick, and Pahler (OM, E&S, and IH cores). This course includes on-site student projects completed by interdisciplinary teams from RMCOEH (IH, OM, OIPRT, and E&S) who visit local manufacturing facilities and work together to solve real world health and safety problems. The off-site ATK M.S. Mechanical Engineering Program includes approximately 7 active students, most of whom focus on Ergonomics and Safety as their area of emphasis and take 3-5 E&S courses.

Industrial Hygiene (IH) Rod Larson, PhD, CIH

This last funding period the IH program exceeded its goals and objectives. Thirteen students funded by the NIOSH training grant and one funded by a R01 grant graduated from the IH program this period (July 1, 2013 to June 30, 2014) with Master of Science in Occupational Health (MSOH) degrees having emphasis in industrial hygiene, and one student not funded by the NIOSH train grant also graduated with an MSOH degree with emphasis in IH and one student graduated with a Graduate Certificate in Occupational Safety and Health (COSH) with emphasis in IH. Five (5) full-time IH students began matriculation as new students in the MSOH degree program this same period; 5 in Fall 2013, none in Spring 2014 Semesters; all with emphasis in Industrial Hygiene. Returning students include four full-time students in the Fall 2013 semester. Two students dropped out of the program this funding period that normally would have also returned Fall 2014 semester. There are no returning part-time students in the MSOH degree program for Fall 2014. In addition, regarding our diversity recruiting program, the black (not African American) student in our MSOH degree program graduated during this funding period. Thus, including the 15 IH students that graduated, and the one COSH graduate, and the six new or returning IH students for the last funding period, the total number of students in the general IH program for this funding period was 22. In addition to the MSOH degree and the COSH student, there were three (3) students in the Ph.D. in Occupational and Environmental Health (OEH) program during this funding period; two with emphasis in IH and one with emphasis in OIPRT. Examples of the IH Program research projects conducted this last funding period included: working with The Veterans Administration Hospital to evaluate exposure concerns in their dental laboratory; evaluation of ergonomic issues associated with removal of plugs for tapping into smelter lines to remove slag; evaluation of aerosol monitoring methods to determine human nasal deposition fraction for exposure to mixed sizes of aerosols; evaluation of various types of direct-read monitoring instrument for monitoring subtilisins; and evaluation of the impact of ventilation in hospital surgery recovery room to control exposures from anesthetics to health care workers. We are currently accredited by ABET-ASAC and receive our site visit by an accreditation evaluation team in September, 2010. On August 2, 2011 we received official notice of renewal of our accreditation to September 30, 2017.

Occupational Injury Prevention & Research Training (OIPRT) Don Bloswick, PhD, PE, CPE

The OIPRT program continued to meet its goals and objectives. The program included three PhD level trainees during the AY. The OIPRT program continues to provide quality Occupational Safety Engineering and Occupational Injury Epidemiology (OIE) academic programs, and accomplish NORA-related OSE and OIE research and translate it into practice (r2p). The academic program integrates engineering and epidemiology, with students in the OSE program emphasizing engineering and students in the OIE program emphasizing epidemiology. Two of the three OIP Students were involved in large prospective NIOSH-funded research projects: (1) Upper Limb Musculoskeletal Disorders - Quantifying Risk; (2) Low Back Pain - Quantifying Risk Factors. One third-year Ph.D. OIPRT student has extensive academic and practical experience in construction safety. OIP students were authors on two peer-reviewed journal publications in the AY. In addition to journal submissions, students are required to present their research at the annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, which has been held on the University of Utah campus since 2003.

Occupational Medicine (OM) Eric Wood, MD, MPH

In total, the OM residency program has trained 10 highly skilled OM physicians filling a critical need to NIOSH Region 8, which is underserved by OM specialists. During the period of 07/01/13-06/30/14, 10 residents were enrolled in the program. This total includes 6 residents in the PGY2 year: 3 OM residents, and 3 Residents in Aerospace Medicine (RAM), and 4 residents in the PGY3 year. Please note that 1 resident transitioned from the PGY2 to PGY3 year in January 2014 and is included as PGY3 resident, and one resident matriculated off-cycle as a PGY2 resident in January 2014. We plan to maintain as many as this current number of OM residents in the 2014-2015 academic year. Academic training consists of completion of graduate education over a period of 2 semesters leading to the MOH degree. Training in the clinical practice of OM is conducted in both years. One PGY2 resident completed the MOH degree in December 2013, and two PGY2 OM residents completed the MOH degree in May 2014. Three residents from the US Air Force completed the MOH degree in May 2014 and are now PGY3 RAMs with the US Air Force. We anticipate maintaining or increasing the number of residents through the US Air Force. In addition to ERC funding, the program successfully competed for funding from the US Health Resources and Services Administration (HRSA) to support the increased total number of OM residents. The combination of ERC and HRSA funding provides leverage and an economy of scale to significantly enhance training opportunities for all residents as well as the complementary interdisciplinary graduate training programs at RMCOEH. Clinical and research activities continue with a focus on work-related musculoskeletal research, and commercial motor vehicle operator (truck driver) health, and safety. The program takes the lead role in the development of state-of-the-art evidence based occupational medicine practice guidelines through work with the American College of Occupational and Environmental Medicine (ACOEM) to improve care of injured and ill workers.

Continuing Education (CE) Connie Crandall, MA, MBA

The CE Program met its goals and objectives for 2013-2014. Attendance remained well above the NIOSH-required minimum high with 5214 trainees attending 213 CE activities. This includes both traditional (3579 trainees) and online (1635 trainees) activities. The program continues to successfully offer the online Ethics and Professional Practice of Industrial Hygiene course; in addition, modules from an Occupational Epidemiology online academic course have been recorded and will also be available as a continuing education offering, either as individual modules or a complete course. Over this past grant period, we have sponsored courses in other states that include ID, MT, SD, and ND. Plans to hold a course in Wyoming are currently under negotiation. Numerous courses are also held outside of Salt Lake City (Clearfield, Dugway, Moab, Murray, and Brigham City) to attract attendees from surrounding states. Courses are also held annually in Eastern Idaho to accommodate the needs of those requiring asbestos training in that area (although not Region 8, it is geographically proximate). Commercial Driver Medical Examination courses continue to be held throughout the US. The program will, again, collaborate with the MAP ERC in Colorado to administer a joint regional needs assessment. New courses offered during this period include 1) Global Harmonization Systems; 2) Supervisor Safety Course; 3) Safety Culture Enhancement and Assessment, 4) Radon Health Hazards, Testing and Reduction, and 5) Predictive Analytics. Another significant addition to the program resulting in four

new courses is the recent collaboration between the RMCOEH and the Department of Pediatrics who have worked in concert to become approved providers of Healthy Homes Training through the National Center for Healthy Housing. Courses held this year include: 1) Healthy Homes Rating System; 2) Essentials for Healthy Home Practitioners; 3) Healthy Homes for Community Health Workers; and 4) Healthy Home Assessment. Plans to offer the Essentials for Healthy Homes Practitioners in Wyoming for two tribes are currently underway. Finally, the RMCOEH is working in partnership with the American Association of Occupational Health Nurses to offer a course entitled "AAOHN Certificate for Occupational and Environmental Health Nurses" to be held in November, 2014.